

PROJECT FACT SHEET

CONTRACT TITLE: Frequency Dependent Seismic Attributes of Fluids in Poorly Consolidated Sands
(PARTNERSHIP)

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DOE HEADQUARTERS PROGRAM MANAGER: NAME: Edith C. Allison PHONE: 202/ 586-1023 DOE PROJECT MANAGER: NAME: Purna C. Halder LOCATION: NPTO PHONE: 918/ 699-2084 E-MAIL: phalder@npto.doe.gov	CONTRACT PROJECT MANAGER: NAME: Kurt Nihei PHONE: 510/ 486-5349 FAX: 510/ 486-5686 E-MAIL: ktneihei@lbl.gov
PROJECT SITE CITY: Berkeley STATE: CA CITY: STATE: CITY: STATE:	CONTRACT PERFORMANCE PERIOD: 02/15/1999 to 03/31/2001 PROGRAM: Supporting Research RESEARCH AREA: Partnership/Oil Recovery Technology PRODUCT LINE: ADIS

FUNDING (1000'S)	DOE	CONTRACTOR	TOTAL
PRIOR FISCAL YRS	300	400	700
FISCAL YR 2000	300	0	300
FUTURE FUNDS	300	0	300
TOTAL EST'D FUNDS	900	400	1300

OBJECTIVE: The objective of this work to ; 1) provide the theoretical basis for frequency-dependent amplitude attributes associated with multiple fluid and gas phases in poorly consolidated sands for a range of consolidation conditions, 2) explore the possibility of new seismic attributes, 3) use numerical modeling to examine optimum 3-D seismic acquisition geometries and processing schemes for illuminating these attributes in poorly consolidated sand reservoirs, and 4) apply the results of these analysis to 4-D seismic imaging.

PROJECT DESCRIPTION:

Background: Recent advances in seismic imaging hardware and processing over last decade resulted in a variety of seismic attributes to image pore fluids on poorly consolidated reservoir sand. This project is to establish the theory capable of predicting the effects of pore fluids on wave amplitudes.

Work to be Performed: 1. Laboratory acoustic Measurements on poorly consolidated sands.

2. Development of rock physics model for poorly consolidated sands

3. Numerical analysis of Acoustic Propagation

4. Processing of seismic Attributes

PROJECT STATUS:

Current Work: The technical approach is taken to first develop rock physics relations.

The focus will be to obtain a frequency-dependent theory for wave propagation. Rock physics model will be embed into numerical simulator and the synthetic data will be analyzed for seismic attributes that can be used for 4-D monitoring of changes in reservoir fluid/gas migration and reservoir consolidation.

Scheduled Milestones:

Laboratory measurements of frequency dependent attenuation

Develop rock physics model

Numerical simulation of wave propagation for fluid saturation

Accomplishments: The project consisted of the start-up activities in the laboratory tasks and numerical modeling. Stated working towards the 4-D fluid substitution simulations and began theoretical work on a 3-D elastic ray code which preserves amplitudes at caustics for attenuating medium.